Service Life Prediction of Polymeric Materials and Systems

JW Martin, JW Chin, T Nguyen, and CC White

This research focuses on developing improved methodologies for characterizing the degradation and predicting service lives of polymeric coatings, plastics and sealants in building and construction industries. Specific areas of research include (1) developing methodologies for service life prediction; (2) developing improved characterization methods; (3) developing mathematical models to quantify degradation of coatings and related materials, (4) relating laboratory results with field data; (5) development of accelerated tests; (6) identifying the mechanisms and kinetics of degradation process under the influence of weathering elements, including UV, relative humidity, and temperature; (7) investigating photodegradation under different environmental and mechanical stresses, and (8) conducting *in-situ* measurement of water at the polymer/substrate interface. These studies provide essential quantitative data for predicting the performance and service lives of polymeric coatings, plastics and sealants used in building and construction industries.